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Re-Envisioning the Otis Mill: A Project on the Renovation of the Otis Mill in Jay, ME

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Community Engaged Research in Environmental Studies

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“Re-Envisioning the Otis Mill : A Project on the Renovation of the
Otis Mill in Jay, ME”

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Executive Summary

Upon our first meeting with our community partners, Mary and Tim, they gave us an insight of what they had envisioned for the Otis Mill—a paper mill built in the late 1880s that thrived up until the early 2000s. The mill is in its early planning stage, where the opportunities of ventures and projects for the mill still remain open ended. However, the extent of success for mill revitalizations often needs to align with the proper market conditions and public support. For that reason, our group created a list of possible projects and ventures that could be built within the mill, which we would then narrow down and create a feasibility plan for. The methods of analysis through the demographics of the Jay community and the availability of certain activities allowed us to specify and narrow down our list into four concrete projects. The factors and components that led us to select each of these four projects can be found within our detailed methods section and appendix. Ultimately, this report provides the feasibility studies of the following four projects—Green Roof Technology, Independent Movie Theater, Lodging, and a Community Gym. The brief findings of each of these projects are as follows:

Green Roof technology has a relatively low economic return, but the project holds benefits for the strengthening of the mill structure, the surround environment and the use of the mill as a central and inviting space within the town of Jay.

Independent Movie Theater has a relatively flexible start-up costs and it gives the owners great control over the prices and income that comes from this project.

Additionally, the opening of the movie theater can bring in sources of income from the Mill Café, and visitors from nearby towns such as Farmington and Livermore Falls.

Lodging can vary in pricing, in terms of selecting the choice and size of rooms available for booking (i.e. hostel, commercial). As the development of the mill renovation unfolds, the investment in this project would help bring and keep guests within Jay.

Community Gym has a relatively high start-up cost due to structure qualification and exercise equipment. Additionally, the economic return is fueled by start-up memberships costs, which may or may not offset the start-up costs.

The report finds that the most feasible project is the independent movie theater followed by the green roof project. These two projects together can bring in visitors from surrounding towns and help produce an inviting atmosphere within the town of Jay. The report realizes that the study of the feasibility of these four projects on the foundation of the town's demographics and the lack of availability of such activities within Jay is a limitation within this project. These four projects are not yet thoroughly introduced to the entire community of Jay, and may not incorporate the full priority of the activities that are wanted by the Jay community. To further support these projects and help transform the mill into a place that becomes more integrated within the community, further surveying should be done to infuse the support and inputs of Jay residents into these projects and any other future projects for the Otis Mill.

Introduction

The request for research into the feasibility of different projects and businesses that could sustainably be run and profited by in the hands of the Otis Venture businesses leaders Mary Howes and Tim DeMillo has been taken on by Bates student of the Environmental Capstone class. There are no prior proposal of this kind as far as we know. Since Otis Venture took over the Otis Mill in 2009, the building has fulfilled several uses. Equipment from the mill is being stripped and sold off to other mills and businesses, while the building also tenants the companies Little Bucket Firestarters, Walston Woodcraft, Cerealus, the Mill St. Cafe and Memorial Guard. However, considering the mill is 600,000 square feet, they occupy a very small amount of the space in the building.

Mary and Tim have asked for assistance in their quest to fill the mill with businesses and plans both profitable for them and useful to the community. They have specifically asked us to research viable business models that could be run in the mill considering the needs of the community of Jay, Maine, the surrounding towns, and possible tourists.

Our group's main goal is to supply Mary with four projects we have researched into and relay to her which one we think is the one she should start working on or at least look more into. Most of our work for this project will focus upon research and analysis regarding what businesses will be the most successful in the mill. Our findings by the end will be presented to the community at the end of the semester, where a presentation will be followed by dot voting as to what future plans next year's students should research into and a sign-up sheet for an email list-server in which conversation about the best usages of the mill will continue.

An independent movie theater is a great way to add a community feel to the town of Jay and surrounding areas. The profits and income can come from the ticket sales, and possible membership fees, food, drink, merchandise sales, advertising revenue (both screen and brochure), and public funding (Michael Batton Kaput, Demand Media). Movie theaters are a proven success and can be an enjoyable outing for people of all ages; having the freedom to handpick the films shown can also create a more personalized feel. Although there is a significant start-up cost, the rewards can be exponential.

Although, green projects such as trail spaces and green roofs tend to have relatively low income return, there are benefits in the long run that can enhance community interactions and aim to revitalize the surrounding areas of these projects. The costs, obstacles and benefits of these projects are highlighted in the case study of National Bohemian Brewery and the Bread for the City Rooftop Garden. These two case studies have been chosen as there has been research found on the planning stages of these projects. Additionally, the research and understanding of the two case studies will be adapted so it is most helpful and relevant for the town of Jay. There are also two trail space projects that are new within the town of Jay. This research will also look into some of the benefits that these projects (The Chisholm Trails and the Whistle Stop Trails) will hold for the town as it becomes a greater part and resource of the town.

Given that the nearest gym to the Otis mill is 25 miles away, the beneficial returns for the community if a gym were placed in the mill would both be economic and social. Although the short term investment costs would be high, returns would most likely occur fairly quickly, as membership costs to use the gym would quickly be invested back into the

business. The fact that there would be no competition also adds to the returns of the business.

When considering whether or not a Hostel would be a profitable addition to the Otis Venture businesses, it was important to research into the population statistics of Jay, Maine as well as the population of the surrounding communities to see what age group would be most beneficial to target in regards to businesses plans. Through looking at the age distribution of Franklin County, it would be best to target those in the age ranges of 35-49 and 50-64 (US Census Bureau) However, there are still a good amount of young adults in the county that should not be disregarded, since they are the most likely to utilize centers of activities and attend events. It is also important to research the businesses in and surrounding the Jay mill so we can find ways to draw towns to visit the Otis Mill, having it offer something their town is lacking.

Methodological Approach

In order to develop a plan of action our initial methods included visiting the Otis Mill in Jay, Maine to meet with the owners, Tim and Mary. After examining the mill and strategizing with the owners on the many renovation possibilities, we decided to focus on four specific projects that had the potential to positively impact the town of Jay and neighboring communities. Considering the end goals of the project, a four step feasibility study was conducted in order to develop four appropriate business blueprints and to ensure long-term success for the mill. A feasibility study involves a number of critical points, such as the livelihood, costs, and benefits of renovating the Otis mill. In short, this feasibility study method relied heavily on tools like scenario planning in order to guarantee long-term success for both the Otis mill and its owners.

1. The first step of the feasibility study involved examining the market within Jay, Maine for a critical analysis of the competitive landscape for service. The purpose of this step was to paint a realistic picture of likelihood that enough residents will be not only be satisfied but also interested in the new services that will be offered after renovations.

(see supplemental methods for details with approach)

2. The second step of the feasibility study included reviewing the technical requirements. It is important to assess the technical requirements of such a huge venture, because it helps determine whether the mill will require more resources internally. Also it played an important role in determining whether outside vendors and partnerships can handle such tasks with the already available resources.

3. The third step of the feasibility study consisted of developing a sustainable business model from the different research gathered. Developing a blueprint for a sustainable business model allowed for an accurate insight on the long-term viability of the overall business model.

4. The final step of the feasibility study ensured a quick and reliable exit strategy for the mill owners. This step consisted of analyzing different potential exit strategies. This step will allow for the owners to turn over on profits from the mill while successfully giving up ownership of this venture, once they felt comfortable with the growing success generated from the renovations.¹

¹ Taylor, Joe, Jr. "Reviewing the 4 Steps of Feasibility." Edited by Rebecca Scudder. Bright Hub Project Management. Last modified February 25, 2013. Accessed December 10, 2013. <http://www.brighthubpm.com/project-planning/5598-feasibility-study-method/>.

Results and Discussion

Green Rooftop Technology and Greenway:

Introduction:

Green roof technology is a relatively new advancement that consists of an installation of a layer of vegetation placed over a waterproof system. Considering this project as a retrofit holds benefits of flexibility in start-up costs and the initial monetary investment in this project is often offset by the energy efficiency of this new system. There are three variants of green roofs: extensive, intensive and semi-intensive. As defined by the National Park Service²:

1) **Extensive green roofs** are characterized by:

- Shallow growing medium (less than six inches)
- Limited plant diversity
- Minimal watering requirements
- Not accessible for the public

2) **Intensive green roofs** are characterized by:

- Deeper growing medium
- Supportive of a greater plant diversity
- Requires garden care and maintenance
- Is accessible by the public

3) **Semi-Intensive green roofs** lie in between these two variants

Despite the differences in these three categories of green roofs, they all hold a similar structure. The layers of the waterproof system that lie beneath the vegetation are

² Nps.gov."Green Roofs and Historic Buildings--Technical Preservation Services, National Park service."
<http://www.nps.gov/tps/sustainability/new-technology/green-roofs.htm> (accessed Nov 24 2013)

the identical. Additionally, one can see the main difference between the intensive and extensive variants is the depth of the growing medium. It is important to note that this particular layer is determined by the roof structure, the plants that the building owners wish to grow, the annual precipitations (e.g. rainfall and snow), which would affect the storm water performance requirement. (See Figure A in Appendix)

The Benefits:

The benefits of using green roofs as a retrofit for the mill holds a few positive advantages, in terms of the upkeep and maintenance of the mill, the environment health of the surround areas (e.g. the river and air), and if the roof is accessible by the community, it could be used as a public space for community gatherings and events.

Upkeep and Maintenance of the Mill:

Installing green roofs technology is said to help prolong the life of the structure of the mill as well as making the mill much more energy efficient³. The reason for this is that the vegetation layer and the waterproof layer protect the mill's original roofing materials from ultraviolet rays and the high temperatures during the summer months. One research also goes as to say that if the green roof is properly taken care of, it has the potential to double the lifespan of the roof. This is important to consider as the upkeep and care of the mill will ensure the longevity of the structure as well as making it a safe place to be as it reformed.

³ NASA & Green Roof Research. NASA & Green Roof Research. NASA, 2012. http://www.nasa.gov/pdf/665642main_NASA_and_Green_Roof_Research_Revised_9_6_2012.pdf.

Additionally, during our first meeting, our community partners have expressed concern for the heating system of the mill. The mill is extremely spacious and during the extreme weathers of the season, it is important to find ways to reduce those costs for the mill owners as well as for the ease and enjoyment of those who are inside enjoying the activities of the mill. During the winter, the extra layers of the green roof installation provide insulation, reducing the amount of heat that leaves the building. Although it is important to note, in terms of heating, this project is a supplementary system. It does not replace the need for another heating thermal insulation; the green roof insulates, but it is not enough to warm the entire mill structure on its own.

During the warmer months, the plants of the vegetation layer absorb the sunlight and use the heat energy to turn stored water into vapor. Thus, the heat from the sunlight is directed into another use and the heat that is transferred onto the building's roof is reduced. (See Figure B in Appendix)

The Environment Health of the Surrounding Areas:

The benefits listed within this sub-section focuses on the physical landscape and resources of Jay. The first benefit is the management of stormwater. Precipitation of any storm, along with the sediments on the roofs, tends to runoff the buildings into the surrounding areas. In some cases, this may not have a great influence, but in this particular case, Jay's annual rainfall (in inches) is near the state's average and higher than the national average (For annual weather data, please refer to the Appendix). Additionally, the Otis Mill is located on the banks of the Androscoggin River, making this concern a greater issue. Green roofs, has the ability to keep stormwater and its

sediments from entering into Jay's water sources (i.e. the Androscoggin River) and into the town's sewage system. (See Figure C in Appendix)

On a side note, one way to manage and use rain water is to collect, store and reuse them for other purposes at the mill (i.e. irrigation for vegetation on rooftop, or for flushing toilets). This idea of recycling storm water is seen in the National Bohemian Brewery/Brewers Hill Complex in Baltimore, Maryland. The reusing of storm water can help reduce costs of water usage within the mill.⁴

Community Building:

In the last sub-topic of this section, the third benefit is the enhancement of community engagement and interactions within the town of Jay. If the rooftop is accessible and our community member looks into an installation of an intensive green roof, the following opportunities can become benefits and options for the community of Jay. Roof top gardens—or the idea of putting plots on the roof for either enjoyment or community gardening, is a great way to build community relationships. It strengthens community relations and interactions, as well as brings all participants to the mill. Additionally, gardens can pave the path for local gardening workshops, farming, cooking and the value of nutrition.

Another use of public space for the roof top (if it is accessible), is to design a simple garden and park area for the community to use. It can become a recreational space for outdoor festivals, concerts or any other events. Having accessibility to the roof places the people of Jay and any visitors at one the higher altitudes of the town

⁴ Nps.gov."Green Roofs and Historic Buildings--Technical Preservation Services, National Park service." <http://www.nps.gov/tps/sustainability/new-technology/green-roofs.htm> (accessed Nov 24 2013)

(allowing for an overlook of the town) and it can become a great public space to bring people together.

Factors and Obstacles to Consider in the Planning Stage:

There are certain qualifications that must be met before the installation of a green rooftop. The most important factor is the weight capacity of the roof in its current condition. This is especially important for older buildings that may have become worn through the many years of use. The layers of the waterproof system as well as the soil, plant and the water it absorbs, makes the green roof system relatively heavy. The determination of the load capacity of the building influences the type of green roof system that you can choose for your building.

Another consideration is the condition of the utilities systems of the building. It is especially important to have these systems inspected prior to the installation of the green roof. The understanding of the conditions of these systems can help increase the extent of benefits from green roof technology.⁵

Thus, one of the primary questions, our community should first consider is “What is the main reason for installing a green roof?” Reasons can stem from energy efficiency, storm water management, heat island reduction (more relevant to urban cities), and for public use and enjoyment. The narrowing down of features and benefits of green roofs can reduce costs by selecting only what is necessary and wanted for the mill. (See Figure D in Appendix)

⁵ Nps.gov.”Green Roofs and Historic Buildings--Technical Preservation Services, National Park service.” <http://www.nps.gov/tps/sustainability/new-technology/green-roofs.htm> (accessed Nov 24 2013)

Costs:

One of the great benefits of using green roof technology as a retrofit is the flexibility in costs. The extent of technology of green roofs correlates with the start-up costs. The start-up costs varies and ultimately it is dependent on the size, purpose and the building materials of the rooftop. EPA has provided an estimated value and cost for installing green roofs. For the simpler extensive rooftops, they can start at \$10 per square foot and it can be up to \$25 per square foot for the intensive roofs. Additionally, there is also a need for an annual upkeep maintenance fee, although this tends to pertain to intensive roof tops. The costs, as surveyed by EPA, range from \$0.75 - \$1.50 per square feet.⁶

Lastly, costs can also be reduced through combining green roofs with thermal insulation, cool roofs and solar panels. The mixture of using various projects can emphasize on what the mill structure may need the most, making it more energy efficient and potentially reducing costs for our community partners. (See Figure E in Appendix)

The Case Studies:

This section will discuss two case studies and their brief background, which will help highlight the reasons for the installation of green roofs and the variation that exists within rooftop projects.

1. Bread for the City (installation of roof top gardens in the DC area) *Intensive*
2. National Bohemian Brewery/Brewers Hill Complex (Baltimore, MD) *Extensive*

⁶ Epa.gov. "Green Roofs | Heat Island Effect | US EPA." 2013. <http://www.epa.gov/hiri/mitigation/greenroofs.htm> (accessed 19 Nov 2013).

1. Bread for the City Rooftop garden (DC) *Intensive (See Figure F in Appendix)*

*Background*⁷

This green roof project is the first large scale agricultural project in the DC region. It was a project taken on by the organization, Bread for the City. The 3,500 square feet green roof was first set to be an extensive roof top. However, after further inspection, the organization was told that the green roof could hold more weight than they originally thought. With a change in plans, the rooftop will now hold from forty to sixty raised beds and the organization is planning to grow all sorts of seasonal vegetables and fruits. The growing medium for the vegetation layer is 8", categorizing it as an intensive green roof. The organization wants to incorporate workshop tutorials on nutrition, gardening, harvesting and cooking for involved community residents. This project's first installation was set in late 2010 and the start-up costs were estimate to be \$50,000 with an annual \$15,000 maintenance fee. In addition to the community benefits, Bread for the City also emphasized on the environmental and financial benefits (storm water control, reduction of the urban heat island effect and energy efficiency).

2. National Bohemian Brewery/Brewers Hill Complex (Baltimore, MD) *Extensive (See Figure G in Appendix)*

*Background*⁸:

⁷ Bread for the City. "A Healthy Rooftop: Growing our own Food for the City." 2010. <http://www.breadforthecity.org/2010/10/healthy-rooftop-growing-own-food-for-city/> (accessed 5 Dec 2013).

⁸ Nps.gov. 2013. *Green Roof Case Studies—Technical Preservation Services, National Park Service*. [online] Available at: <http://www.nps.gov/tps/sustainability/new-technology/green-roofs/natty-boh-case-study.htm> [Accessed: 24 Nov 2013]

The construction of the National Bohemian Brewery took place over a time period of 1885-1960. The building had a flat roof, which makes it a good starting candidate for green roofs. The owners of the brewery chose to install an extensive green roof, on their 14,500 square feet rooftop. One of the reasons they chose to retrofit their roof is to take advantage and qualify of the local energy tax credits. Due to the selection of an extensive installation, it provides environmental benefits, reducing costs for the owners, and they were not required to maintain these gardens as much as they would have need to for an intensive garden. Additionally, the company combined green roofs with cool roofs on their building and used their beer brewing tanks to collect stormwater to reuse throughout their building. The idea of combining different roofing options (i.e. green roofs and cool roofs) and the recycling of rainwater is valuable; however the one limitation with this case study is the absence of a cost for this project.

Greenway Projects in Jay:

Originally, our group wanted to look into the two different types of green projects that would emphasize on the community engagement and interaction with the landmarks of Jay and its surrounding towns, but also within the community of Jay. In addition to green roofs project, we also wanted to look into trail projects as well. We spoke to our community partners, Mary and Tim, and this was a project that they have already started planning for. This section will briefly discuss some of their current greenway projects and the long-term benefits as this resource becomes more integrated within the community.

Benefits:

Although greenways and trails tend to provide little income return, it does provide some other benefits that are seen in the form of community relations, well-being of the residents, and public advertisement of local business. Some of which include⁹:

- 1) Bringing the community together, revitalizing the surrounding area and encouraging recreational opportunities
- 2) Promoting the idea of trails tourism, making areas and particular destinations much more accessible
- 3) Promoting the idea of public health and daily exercise that concerns the well-being of residents
- 4) Increasing business advertisement that lie along the path (idea of trail towns and businesses)
- 5) Increasing the value of land property, both in terms of aesthetically and financially

Current Projects and Trail ways:

This section will look into two specific projects that have been integrated within the town. The first is Chisholm Trails, which is a trail that lies parallel to the Androscoggin River. The path connects the high schools and neighborhoods of Jay and Livermore Falls together. The vision of this trail is to engage, educate and celebrate the industrial heritage and landmarks of the two towns. The second project that has been recently implemented is the Whistle Stop Trails, which has been renovated to be

⁹ Americantrails.org. 2013. *Evidence for economic benefits of trails and greenways from American Trails*. [online] Available at: <http://www.americantrails.org/resources/economics/economic-benefits-trails-macdonald.html> [Accessed: 20 Nov 2013].

extended into the town of Jay. This extension was successfully paved in February 2013 and it's a trail that invites residents and visitors to use through all the four seasons. Bikers, walkers and ATV enthusiasts, have all driven down this connective path that takes one to and from Farmington to Jay.¹⁰

These two projects create passage and access to the town of Jay from surrounding areas, which is great for bringing in visitors and outdoor activity enthusiasts into the town of Jay and to the Otis Mill. Additionally, restaurants and local businesses within the mill and surround the mill will receive attention from these visitors.

On a Final Note:

Green rooftop spaces and trail ways often have a low economic return. These green projects are more directed towards increasing community interactions and benefiting the social and economic prosperity of the mill town. These two projects have moderately high start-up costs and often need an annual maintenance fee to care for these green spaces. However, the benefits come of these projects are carried through community building—which may ultimately hold positive influences for those who are coming into to visit the town of Jay. Building such a community and environment will provide an inviting atmosphere for tourists and visitors from outside the town.

Lodging in the Mill

In order to discover what form of lodging, if any, would be a feasible and beneficial addition to the Otis mill, our research focused on case studies of mills being

¹⁰ "Whistle Stop Trail", Maine Office of Tourism, Accessed 11/22/2013, http://www.visitmaine.com/attractions/state_national_parks/multi_use_rail_trails/whistle_stop_trail/

transformed into residential spaces in the past, whether or not there would be enough draw to Jay for lodging to be justified, as well as what form of lodging would then be most appropriate for Jay and the Mill in particular.

In regards to mill transformations in the past, hundreds of mills around the world have been turned into spaces meant to be lived in, from hotels to residential buildings. In Lewiston, Maine, an apartment complex was created from Mill number 2 of the Bates textile mill, which was created in 1854. The building project was a success, and currently tenants are occupying The Loft, as it is called. Although this study shows that there is precedent for transforming mills into places for people to live in, Jay Maine does not have housing demand due to a small population and a lack of influx of residents (figure H 1)¹¹.

Therefore, the financial aid that the Loft was awarded in low-income housing tax credits by the Maine State Housing Authority to convert the Bates Mill could not be a form of financing for the Otis Mill. Even though it also falls under the title of historic property under the National Historic Register in 1882¹² it would be unwise to request funding like the Bates Mill did, as the requirements for such funding are not easily met, especially since there is no demand for low-income housing in Jay like there is in Lewiston¹³. Further Maine policies and laws pertaining to this form of renovation are available in the additional bibliographic section in the appendix.

¹¹ "2010 Census Interactive Population Search ME- Franklin County - Census Tract 9714, Accessed 10/20/2013, <http://www.census.gov/2010census/popmap/ipmtext.php?fl=23:23007:23007971400>

¹² John Byrne, "National Register of Historic Places," National Park Service US Department of the Interior, Accessed 11/10/2013, http://nrhp.focus.nps.gov/natreg/docs/All_Data.html

¹³ Nathan Szanton, "Financing Mill Properties," New Jersey Institute of Technology, Accessed 11/10/2013, <http://www.njit.edu/tab/downloads/maine/Nathan-Szanton-Financing-Mill-Properties.pdf>

However, there are also a large number of cases that show a precedent for mills being turned into hotels. Rural mill renovations like Tuddenham mill in England¹⁴, Hotel Certaldo in Italy¹⁵, and the Mill Tales Inn¹⁶ in Canada have all been major successes. These mill renovations show that draw to mill hotels can occur in small town locations and renovated by individuals, which is the situation Otis Mill is currently in. However, it is important to take into account that many of these mill's renovations were helped along by the state or foundation with a large amount of capital that invested in the lodging. For example, the Glenwood Mill in New Jersey¹⁷, created in 1805, has been renovated into a Bed and Breakfast and renovations to turn Pemberton Mill in Massachusetts are underway. Pemberton, a 150,000 square foot mill, is a mill renovation project expected to be created by the Architectural Heritage Foundation, which also developed a 155-unit apartment in Washington Mills¹⁸. In the same area, the old Newark Paper Products mill and warehouse, located on the island behind the Washington Mills apartments, is also being eyed by national developer Forest City for condominiums¹⁹.

While researching whether or not lodging would be a feasible business to implement for Mary and Tim, it was important for us to learn about the projects that are currently being

¹⁴ "The History of Tuddenham Mill," The Tuddenham Mill, Accessed 11/12/2013, <http://www.tuddenhammill.co.uk/explore/mills-history>

¹⁵ "Hotel Certaldo", *Trip Advisor*, Accessed 11/12/2013, http://www.tripadvisor.com/Hotel_Review-g528748-d653249-Reviews-Hotel_Certaldo-Certaldo_Tuscany.html

¹⁶ "The Mill Takes Inn", *TillsonburgNews*, Accessed 11/13/2013, <http://www.milltales.com/history.htm>

¹⁷ "History of Glenwood Mill", *Glenwood Mill Bed & Breakfast Inn*, Accessed 11/13/2013, http://www.glenwoodmill.com/history_of_glenwood_mill.htm

¹⁸ Bill Kirk, "Firm plans to turn Pemberton Mill into historic hotel", *The Eagle-Tribune*, Accessed 11/10/2013, <http://www.eagletribune.com/local/x1876416465/Firm-plans-to-turn-Pemberton-Mill-into-historic-hotel>

¹⁹ Bill Kirk, "Firm Plans", accessed 11/10/2013

developed in the mill. Currently, there are firm plans to build a banquet hall in sections I and J of the mill (figure J). When we discussed the banquet hall with Mary and Tim, they explained that the banquet would most frequently be used for weddings, concerts, conventions, and other forms of gatherings that require large spaces for dining or a performing. Given that many of these events call for overnight stays for a large amount of people, a lodging of some sort was deemed a business that our group saw as a project worth researching to see if it could be created in tandem with the banquet hall.

Demand for lodgings will be high once the banquet hall is open for business, as there are no hotels in Jay, Maine (Figure K). However, lodgings in Jay could be a profitable business regardless of the banquet hall as well. According to the Maine Office of Tourism²⁰, outdoor activities are one of the main draws of overnight visitors of the Mountain and Lakes region of Maine (Figure L).

If a form of lodging is offered in the Otis Mill, overnight tourists of the Lakes and Mountains region will have more of an ability to come to Jay and utilize its environment through outdoor activities. Jay offers Snowmobiling through the Andy Valley Riders, and offers some of the best trails in the area. Recently two trail projects were opened that connect with the Whistle Stop Trail, where “an old Maine Central Railroad line is the foundation of this fourteen miler between Farmington and Jay” takes hikers through the foothills of the western mountains and spent miles under a forest canopy with views of farmlands and distant mountains²¹. Now the trail is 17 miles long and is opened for

²⁰ “Visitor Tracking Research 2012 Calendar Year Annual Report. Regional Insights: Maine Lakes and Mountains”, *Maine Office of Tourism and Davidson-Peterson Associates*, Accessed 10/12/2013, <http://www.visitmaine.com/resource/visitmaine/vault/application/2012-maine-lakes-and-mountains-regional-report.pdf>

²¹ “Whistle Stop Trail”, *Maine Office of Tourism*, Accessed 11/22/2013, http://www.visitmaine.com/attractions/state_national_parks/multi_use_rail_trails/whistle_stop_trail/

walking, biking, snowshoeing, cross-country skiing, horseback riding, dog sledding, ATV riding and snowmobiling²².

The Jay trail system is also something that is worth visiting the town for, and currently additional trails leading to the Otis Mill are in the works (figure M). In addition to the trails, there is North Jay Granite Park, Pine Island Park, and French Falls and it's river walk. The Otis mill is also right on the Androscoggin, and has been used as a launching-off spot for kayakers, including for events like The Androscoggin Land Trust's "Paddle After Hours"²³. Lastly, Spruce Mountain Ski slopes is a 5 minute drive away from the Otis mill, but does not offer any lodging for those who wish to ski for more than one day. There are obstacles to overcome in regards to creating and maintaining lodgings, especially when it comes to start-up costs, licenses, and having a stable influx of occupants in the lodging.

Start-up costs of creating lodging vary widely depending on the type and size of the lodging you would want to create. A creation of a Hostel or a Bed and Breakfast are the least costly to create and keep running, while hotels and motels require more economic investment and upkeep. Considering the lodging will not be created from scratch, and aspects such as electricity and heating are more complex with a renovation, it is difficult to make an accurate project of costs for the creation of the lodging that would be best for the Otis Mill. However, it seems to be relatively costly, from an investment from

²² Bobbie Hanstein, "Whistle Stop Trail extension opens and celebrated on Saturday", *Daily Bulldog*, Accessed 11/13/2013, <http://www.dailybulldog.com/db/features/whistle-stop-trail-extension-opens-celebrated-on-saturday/>

²³ "Jay/Livermore Falls Paddle After Hours", *Androscoggin Land Trust*, Accessed 11/22/2013, <http://www.androscogginlandtrust.org/events/84-august-23-jaylivermore-falls-paddle-after-hours>

\$300,000 dollars for a relatively humble hostel or up to millions²⁴ of dollars depending on whether the entirety of certain mill units we used to house a hotel would be developed.

In regards to licensing, there are obviously requirements for a form of lodging²⁵ to be licensed in the state of Maine. Documents that delineate the expectation of lodgings and how to request a license for creating them are located in the Appendix. A part of the requirements revolve around the creation of a kitchen and up-to-code health standards, but since the Otis Mill already has a restaurant, they have already gone through a large section of the necessary procedures to operate a business in Maine, and should therefore not be too unfamiliar with the processes to get a license.

The way to figure out whether or not lodging will have a steady influx of occupants depends upon the draw of Jay, and the demand for lodging. As shown above in figure 2, there is a definite lack of lodging in Jay currently, which means there will be no competition with any lodging if one is created at the Otis Mill. We also see through graph 1 that people do come to the Mountain and Lakes region for outdoor activities. Through studies from the Maine Tourism Bureau, it is clear that repeat overnight stays in the Mountain and Lakes region are a frequent occurrence through figure 1, and although it has decreased in the past couple of years, it is still a prevalent source of tourism in the region. In addition, you can find a link to the rest of the study in the appendix.

²⁴ “Commercial-Estimating”, *Building Journal*, Accessed 10/22/2013, <http://buildingjournal.com/commercial-estimating.html>

²⁵ “Business Answers About Licensed Facilities”, Maine Division of Environmental Health, Accessed 11/05/2013, <http://www.maine.gov/dhhs/mecdc/environmental-health/el/business/business-answers-lodging.htm>

Although starting up lodgings require a large investment of capital, they have the ability to make a relatively stable profit if there is a good influx of occupants as well. Since the age range of those that generally take overnight trips to the Mountain and Lakes region relatively spread out (Figure Y), our group believes some sort of hotel or inn, rather than a hostel, would be the best form of lodging. A hostel, though the least expensive form of lodging to create, would most likely not meet the desires of those coming to the Otis Mill for weddings or other formal gatherings that the Banquet Hall will host.

Overnight tourism, however, is not the only factor to be taken into account when deciding what form of lodging should be created at the Otis Mill. As we have discussed above, there are (or will be) many features of Jay that would draw tourists to the mill and studies have shown that there could be draw to Jay if there were some form of lodging available in the town. The age of the overnight visitors and their expected activities show that a hostel could be a good lodging option because a good chunk of the population is young, and even those ranging on the older side of the spectrum use hostels. But the banquet hall's draw should also be focused when deciding what form of lodging should be created in the Otis Mill, considering it will draw a substantial population to Jay. While we know through Figures I and L that over-night tourism in the Mountain and Lake region of Maine is stable due to returning tourists and is spurred by interest in outdoor activities that Jay also offers, the lodging should cater towards those that will be the project that will soon be the main source of income for Mary and Tim, which will be the Banquet currently in development.

While it is true that there have been many successful renovations of mills into businesses, especially residential and lodging spaces, a major theme of the large scale

renovations we have seen include investment through the government or foundations. Otis Ventures would most likely need outside economic support to create a hotel to support the users of their banquet hall and overnight tourists. Because the lodging is so reliant upon the success of the banquet hall and involves such a large investment of money, it's advised to only move forward to create the hotel if the banquet hall draws enough visitors to Jay.

Independent Movie Theater:

Introduction

The Otis Mill would greatly benefit from having an independent movie theater as a way to create a more integrated experience for the community of Jay. Movies are a wonderful past time for people of all ages and an affordable way to spend time with family and friends. To evaluate the feasibility of the independent movie theater, I will be looking into the benefits, community building aspects, factors to consider, costs and case studies in Maine.

Benefits

Owning an independent theater would give Mary and Tim full control over the business and would provide a greater share of the profits without having to partner with a large franchise. One of the great advantages to renovating the mill into a movie theater is that the majority of the time commitment and cost goes into finding a location, which is not required. Specific income could come from, ticket sales (and possible membership income), food, drink and merchandising sales, advertising revenue (both screen and brochure), and public funding. There is a website dedicated to the development of

independent cinemas (independentcinemaoffice.org) which provides self-starters with the beginning steps and prerequisite requirements necessary. It is important for the cinema to “be located so that it assists the development of the evening economy and local regeneration”²⁶. Implementing the Mill St. Cafe into the film-going experience can only heighten the ambience and could be the reason why audiences stay loyal to the Otis theater above other competitors.

Community Building

Independent movie theaters are great outlets for families and friends to get together and enjoy a film in their community while enjoying each others company. The Otis Mill can provide discounted prices for dinner and a movie as well as special offers for kids night, date night, classic film viewings, and independent films. With the freedom to choose the films shown, community member can voice their preferences and create their own movie-going experience. Since the 1930s, a small-town theater has been a means for cultural resonation, as well as a business strategy and local institution.²⁷ The opportunity to create a dialogue surrounding the arts is potentially not only beneficial for the mill, but also for Jay and surrounding communities. Another way to provide versatility to the independent movie theater is to provide the youth of the surrounding communities with a theater program. This can be offered during the summer time and after school, for all ages. Providing this opportunity is beneficial for the children and families but also for the community as a whole. The Maine Association of Community

²⁶ (independentcinemaoffice.org)

²⁷ Gregory A Waller, “Imagining and Promoting the Small-Town Theater,” Cinema Journal, Vol. 44, No. 3, Spring 2005.

Theaters (MeACT) is a great resource for the Mill to take advantage of²⁸. There are about fifteen members in MeACT, and one of them doubles as an independent movie theater, the Lincoln County Community Theater in Damariscotta, where live performances such as plays, musical concerts and special events take place²⁹. The possibility of having a multi-functional space for community members to utilize will promote involvement and enthusiasm.

Factors to Consider and Costs

One of the most crucial first steps of securing the plans for an independent movie theater is to obtain funding, Mary and Tim will need to prove to a loan officer and funders that “the business is profitable, sustainable and that your credit can handle the loan obligations”³⁰. That being said an independent theater can “benefit from drawing up a constitution that outlines the main objectives and the way in which business will be conducted”³¹. Another benefit of owning a theater independently is controlling the prices of tickets, “theater owners have strong incentives to prefer lower admission prices and higher admissions than would maximize distributors’ box office revenues”³². By providing Jay with a movie theater, the populations within five to ten miles will increase the demand at the theater and increase revenue and profit, which is why localizing the

²⁸ (meact.weebly.com)

²⁹ (lcct.org)

³⁰ Michael Batton Kaput, “How to Start Your Own Movie Theater,” The Houston Chronicle, 2013.

³¹ (independentcinemaoffice.org)

³² Peter Davis, “Spatial Competition in Retail Markets,” RAND Journal of Economics, Vol. 37, No. 4, Winter 2006.

demand is so crucial³³. It will be important for Mary and Tim to seek reliable funders for this project since the returns can be so profitable for the mill.

Case Study: The Lincoln Theater in Damariscotta, Maine

Examples on current plays, films, and special events showing -

All is Lost

Kill Your Darlings

The Met Live in HD: Verdi's Falstaff

Royal Shakespeare Company: Richard II

By providing their community with these films and plays, The Lincoln Theater is inserting culture, music, literature, and the performing arts into the daily lives of their members.

The history of the Lincoln Theater includes the statement below from their website:

"Sometime in the twenties, the theater was outfitted to show moving pictures. During the past seven years, the Lincoln Theater has added a new annex with an elevator, office space & new handicap accessible bathrooms."³⁴

"In the summer of 2008 the theater was air-conditioned for the first time in history. New seats and a Main Street marquee were added in 2009. In 2010, the ceiling was renovated. In early 2013 we upgraded to a complete digital movie system, with surround sound, and our roof was completely refurbished and restored."³⁵

These additions to the Theater has only made it more popular amongst people from Damariscotta and the surrounding communities.

³³ (Davis 2006)

³⁴ (lcct.org)

³⁵ (lcct.org)

Conclusion

After carefully considering the options for the Otis Mill, we have found that an independent movie theater would be a feasible, both economically and socially, possibility. With that being said, it will require dedication to renovate in the beginning, but once the proper arrangements are made, the success surrounding this opportunity could be exponential for Mary and Tim, Otis Ventures, and the town of Jay.

Community Gym:

When researching whether a community gym would be feasible and a major benefit to Otis Ventures and the mill, we found it necessary to look at past cases in which a small town introduced a gym to the community. We looked at different types of cases, such as a family oriented gym, a corporate fitness gym, and a single sex gym. More specifically, we examined the start-up summaries and projected profit & loss.

Case One:

The first case is a **corporate fitness gym** located in downtown Seattle, Washington. The start-up will require approximately \$300,000 of capital, \$200,000 of which will be provided by the founders and their families. The remaining \$100,000 will come as a loan. Approximately \$140,000 will be allocated to leasehold improvements and \$75,000 to equipment. *See figures P, Q, and R*

The financial plan consisted of analyzing a number of different aspects, such as the fact that the consulting revenue makes up approximately 85 to 90 percent of the

total revenue, and the remaining percent the service revenue. For this gym the salaries and rent were the two major expenses. As far as projected profit and loss the sales are predicted to increase each month with the first year sales totaling close to half-million dollars.³⁶ *See figures S and T*

Case Two:

The second case, a **family oriented gym** located in Monroe, USA . Additionally, it did not have a start-up summary, but a financial plan was present. The financial plan consisted of analyzing a number of different aspects, such as the break-even analysis, the projected profit & loss, the projected cash flow, and the business ratios.³⁷ *See figures U and V*

Case Three:

The third and last case, a **single sex gym** located in the Southtowne Center in southwest Mapleton, Utah. Additionally, it did not have a start-up summary, but a financial plan was present. The financial plan consisted of analyzing a number of different aspects, such as the break-even analysis, the projected profit & loss, the projected cash flow, and the business ratios.³⁸ *See figures W and X*

³⁶ http://www.bplans.com/health_club_business_plan/executive_summary_fc.php#.UpzjwmTwL48. Accessed December 10, 2013.

³⁷ http://www.bplans.com/workout_gym_business_plan/executive_summary_fc.php#.Upzc22TwL48. Accessed December 10, 2013.

³⁸ http://www.bplans.com/physical_fitness_gym_business_plan/financial_plan_fc.php#.UpzeymTwL48. Accessed December 10, 2013.

Conclusion:

In short, the operational and construction costs are likely to exceed a feasible budget. As a result, the high costs translates to residents being responsible for an annual gym membership in Jay. However, despite the initial start up fees gyms have a high precedent potential to attract all types of people and gyms can be used by all age groups of people. Lastly, community gyms turn out to be great venues for parties as well as educational purposes. Based on the median income (\$18,637³⁹), in which Jay, Maine is situated it will cost approximately \$8,972.65 per 100 square feet to construct a community gym in the Otis Mill. Additionally, it would cost approximately \$238.67 per 100 square feet set up different technology features in the gym, such as lighting; sound equipment; heating; plumbing; and electricity.⁴⁰ As far as surrounding competition, the closest workout gym to the community of Jay is about twenty-four miles away.

³⁹ <http://www.usa.com/school-district-2306840-income-and-careers.htm>. Accessed December 10, 2013.

⁴⁰ <http://buildingjournal.com/commercial-estimating.html>. Accessed December 10, 2013.

Outcomes and Implications

After each of our group members analyzed the results of our four projects, we came to the conclusion that the most feasible projects for the Otis mill would be the independent movie theater with the rooftop gardens.

After each of our group members analyzed the results of our four projects, we came to the conclusion that the most feasible projects for the Otis mill would be the independent movie theater and the rooftop gardens. Both of these projects require the least amount of economic investment while increasing community involvement surrounding the mill as well as showing economic return, especially in the case of the independent movie theater.

Through our individual research and comparison to the other projects, our group reasoned that, at this time, a form of lodging in the mill is not an economically viable option. Although it is likely that there would be demand for rooms in a hostel or inn in the mill when the banquet hall begins to host events, the amount of capital necessary to create any functional form of lodging business in the Mill would be exceptionally high. In the case studies of mill to lodging transformations, although many showed successful renovations, many relied upon major funding from the government or foundations with large endowments. At this time, it may be unlikely to gain interest from any foundations or hotel companies willing to invest in a hotel in Jay before the banquet starts bringing in traffic which demands lodging.

A community gym, although it could be a valuable asset for a town, also requires an exceptional amount of capital in its creation that may not be worth investing at this time. This is because, although the independent movie theater and rooftop gardens will

also require an investment of capital, they will bring in more traffic from both inside and outside of the community. The community gym's profit would come from gym memberships, and the demand for such a gym in the community is currently unknown, since a survey was not taken.

Our project group believes that the project that should be implemented, or at least looked more fully into, is the independent movie theater. There is a demand for the theater in the town since there is no movie theater less than 30 minutes away from the town of Jay. With an independent theater that is run at the mill, there is a great ability to choose movies based on their box-office success, creating events like "date-night" or "movie series" nights, drawing the movie-goers to the Mill St. Café, all of which will draw both Jay residents and nearby communities to the Otis mill to watch a movie and have a meal at the Café. The initial economic investment is lower than lodging and a gym, and can be run in every season, always drawing customers because movies continue to draw large of groups of people to theaters.

In regards to projects that draw the community together at the Mill, the independent movie theater is both community-oriented and economically viable and profitable. However, our group also believes that the implementation of a rooftop garden in addition to the theater would increase the Otis Mill's image as a community space for residents to spend time at. Although the rooftop garden's main focus would have less economic gain than the independent movie theater, it still has assets to the mill and the river as explained in the results and discussion section on the rooftop gardens, and reduces costs for mill heating. With its view of the river it could also be a space for gardening classes, nutrition education, a source for fresh food for the mill, a place to

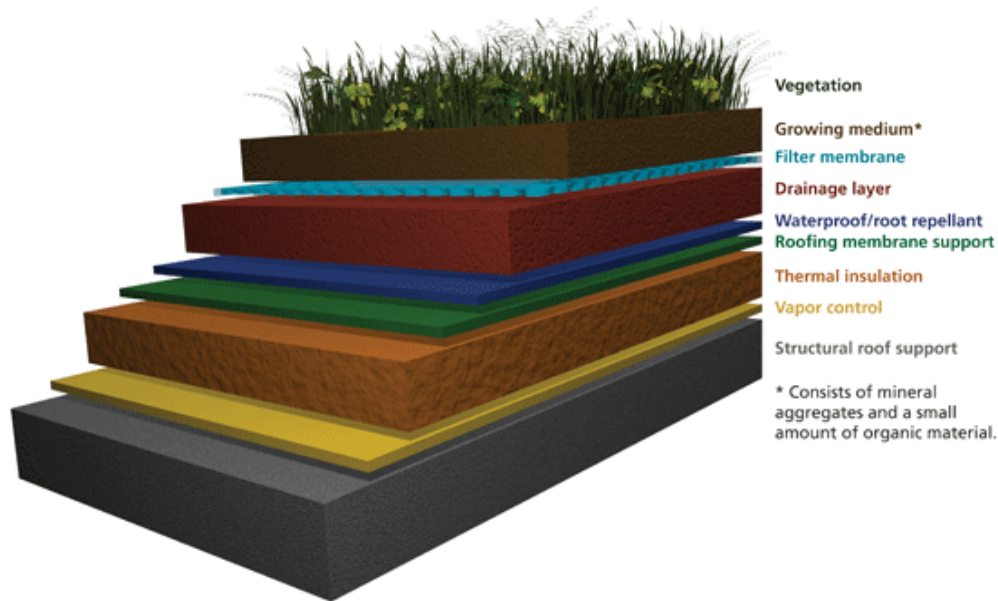
host parties and possibly wedding ceremonies that would then have a reception held in the banquet.

In the end, the two most viable projects to research more fully into would be the rooftop garden and the independent theater, as both are the more economically feasible and draw the most consistent community interaction with the mill.

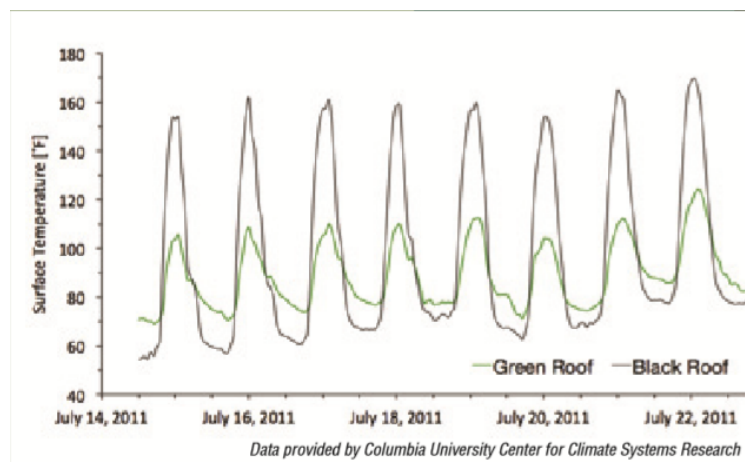
Future Steps

The next logical steps for the Otis Mill would be to further investigate the projects we have studied and presented. Looking into the tourism levels in Jay, Maine and available lodging would be helpful in learning whether the hostel/hotel project would be feasible. For the GreenRoofTop, it would be wise to have a professional examine the roof and see how much weight it can sustain and whether the construction of the building would hold rooftop gardens. In regards to the independent movie theater, research should be done to confirm what exactly it would take to get a theater license as well as the proper procedures behind securing film rights.

Next years students should start to delve into the community involvement. Creating and sending out a survey to Jay and surrounding towns, would garner a better idea of what the population thinks would be best for their livelihoods. There should be a more distinct focus on one-on-one interviews to even further the survey aspect of the project. While the gym is probably the least feasible project, future groups should still look into other alternative activities that could focus on outdoor engagement, exercise, and sporting events.



A. The figure above provides a visual representation of the different layers of a green roof installation. (Source: www.nps.gov)



B: This graph illustrates the reduction in surface temperature with the installation of a green roof. Green roofs, in general, keep

Water Retention for Traditional Roof vs. Green Roof		
Rainfall Retained %	Standard Roof	Green Roof
Average Retention	24%	80%
Retention at Peak Runoff	26%	74%

C: There was a study conducted at Pennsylvania State University, where the data and results showed that green roofs retain triple the amount of rainwater than the conventional standard roof. (Source:

Comparison of Extensive and Intensive Roofing Systems		
	Extensive Green Roof	Intensive Green Roof
Brief Description	<ul style="list-style-type: none"> Thin soil, little or no irrigation, stressful conditions for plants 	<ul style="list-style-type: none"> Deep soil, irrigation system, more favorable conditions for plants
Advantages	<ul style="list-style-type: none"> Lightweight Suitable for large areas Suitable for roofs with 0-30° slope Low maintenance Often no need for irrigation and drainage systems Relatively little technical expertise needed Often suitable for retrofit projects Can leave vegetation to develop spontaneously Relatively inexpensive Looks more natural Easier for planning authority to demand green roofs be a condition of planning approvals 	<ul style="list-style-type: none"> Greater diversity of plants and habitats Good insulation properties Can simulate a wildlife garden on the ground Can be made very attractive Often visually accessible Diverse utilization of roof (i.e. , for recreation, growing food, as open space."
Disadvantages	<ul style="list-style-type: none"> More limited choice of plants Usually no access for recreation or other uses Unattractive to some, especially in winter 	<ul style="list-style-type: none"> Greater weight loading on roof Need for irrigation and drainage systems, hence, greater need for energy, water, materials, etc. Higher cost More complex systems and expertise required

D: This figure provides two columns that compare the advantages and disadvantages of extensive and intensive roofing system. This chart provides a summation of some of the benefits and obstacles of either roofing system.

Table 1: Benefit-Cost Elements for Green Roofs

Benefits/Costs	Energy, Hydrology, and UHI Benefits	Other Benefits
Private Benefits	<ul style="list-style-type: none"> • Reduced energy use • Extended service life 	<ul style="list-style-type: none"> • Noise reduction • Aesthetic value • Food production
Public Benefits	<ul style="list-style-type: none"> • Reduced temperature • Reduced stormwater • Reduced installation costs (from widespread technology use) 	<ul style="list-style-type: none"> • Reduced air pollutants • Reduced greenhouse gases • Human health benefits
Private Costs	<ul style="list-style-type: none"> • Installation • Architecture/Engineering • Maintenance 	N/A
Public Costs	<ul style="list-style-type: none"> • Program administration 	N/A

E: EPA compiled their research information and data into this chart that highlights the costs and benefits of green roofs through the perspectives of the mill owners and the public.(Source: EPA.gov)



F: (Source: <http://dcist.com/2011/05/>)



G

ME - Franklin County - Census Tract 9714



Population

Total Population	4,851
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Housing Status

(in housing units unless noted)

Total	2,252
Occupied	2,032
Owner-occupied	1,621
Population in owner-occupied (number of individuals)	3,908
Renter-occupied	411
Population in renter-occupied (number of individuals)	943
Households with individuals under 18	601
Vacant	220
Vacant: for rent	66
Vacant: for sale	23

Population by Sex/Age

Male	2,380
Female	2,471
Under 18	1,072
18 & over	3,779
20 - 24	246
25 - 34	474
35 - 49	1,048
50 - 64	1,052
65 & over	843

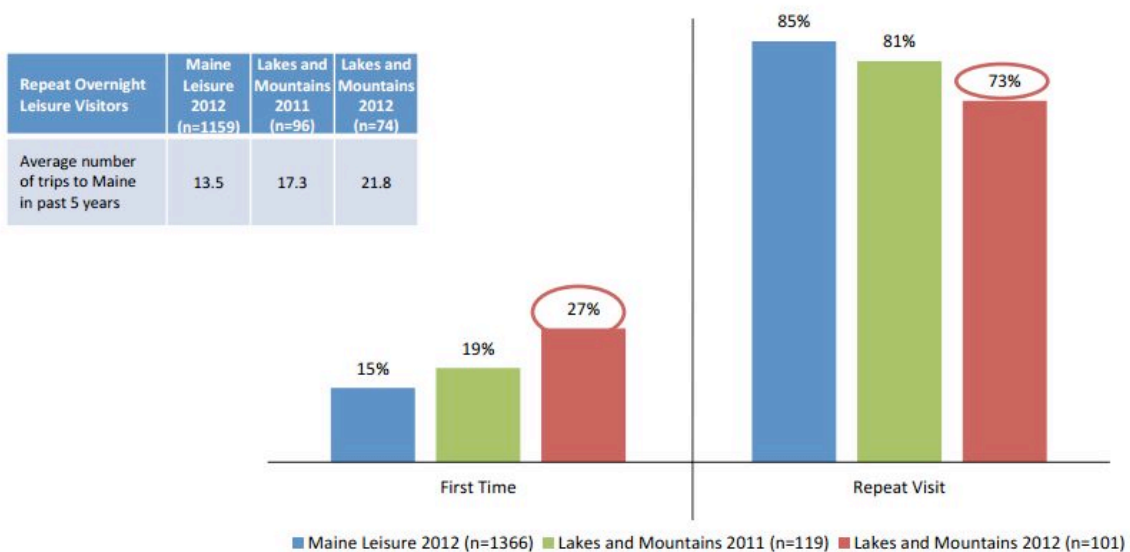
Population by Ethnicity

Hispanic or Latino	69
Non Hispanic or Latino	4,782

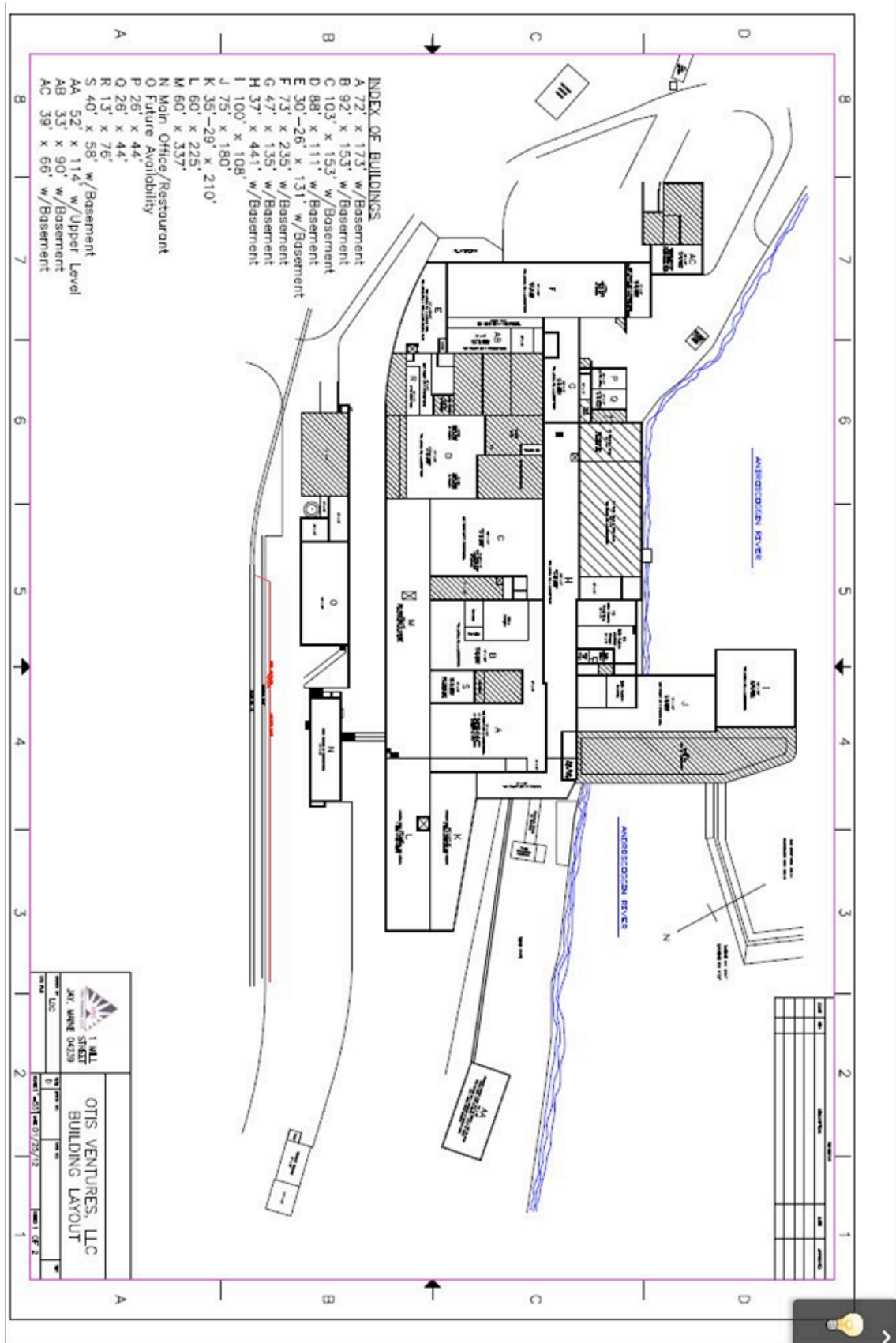
Population by Race

White	4,760
African American	8
Asian	13
American Indian and Alaska Native	19
Native Hawaiian and Pacific Islander	0
Other	6
Identified by two or more	45

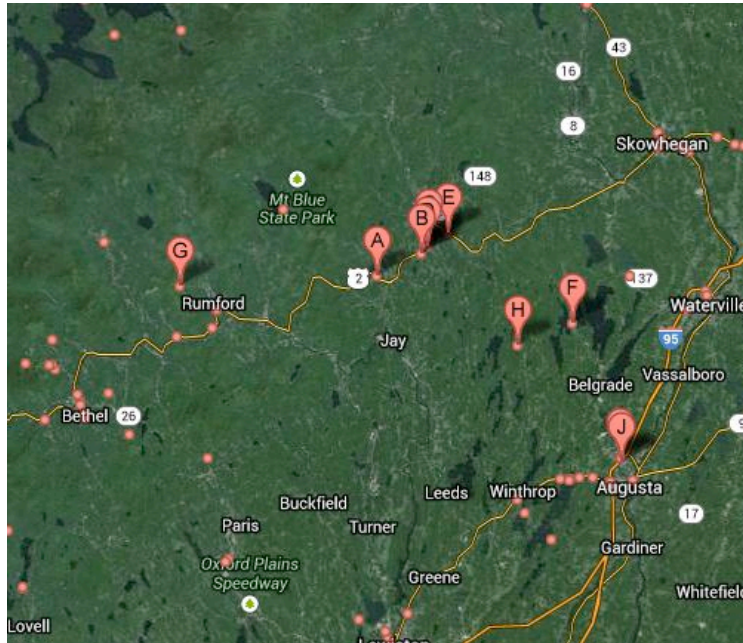
H: Table shows the population and housing statistics of Jay Maine. The vacancy rate of Jay homes and its small population indicates there would be no demand for housing in the Otis Mill. Source: US Census Bureau



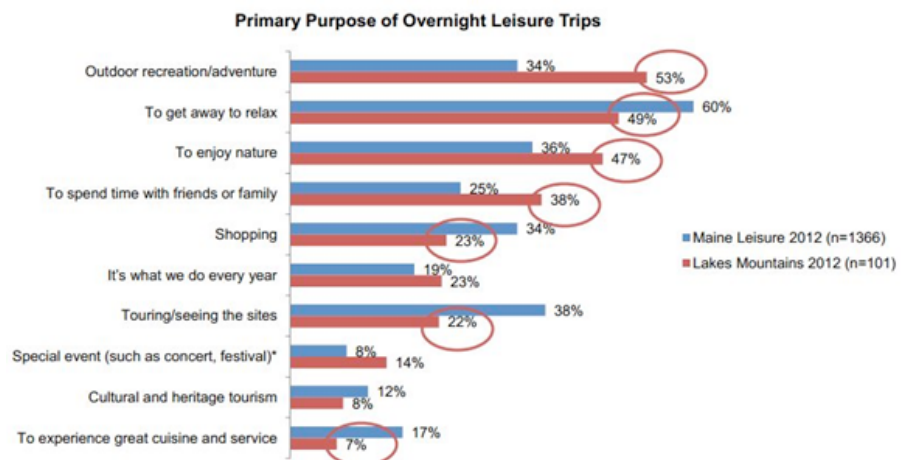
I: These graphs show the rate of repeat overnight stays of tourism in the Lakes and Mountains region of Maine. Source: The Maine Tourism Bureau



J: Layout of the Otis Mill
Source: Mary Howes

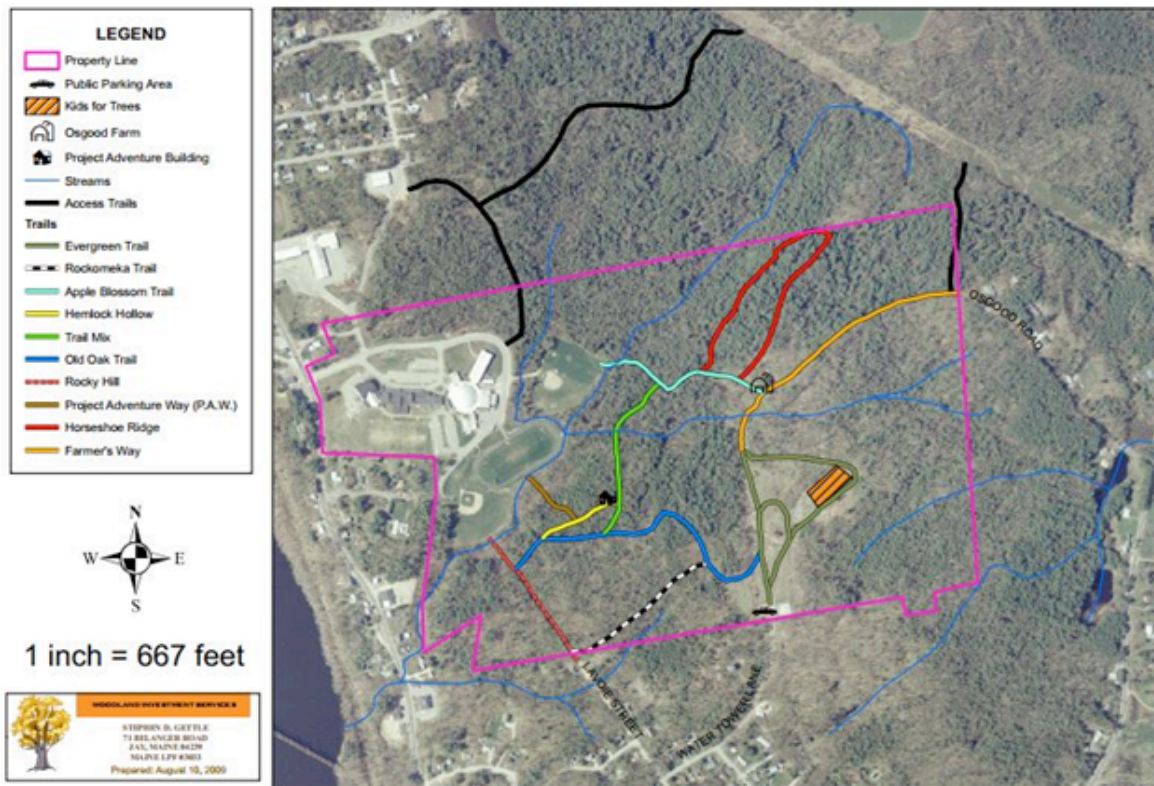


K:



L:

JAY RECREATION AREA TRAIL SYSTEM

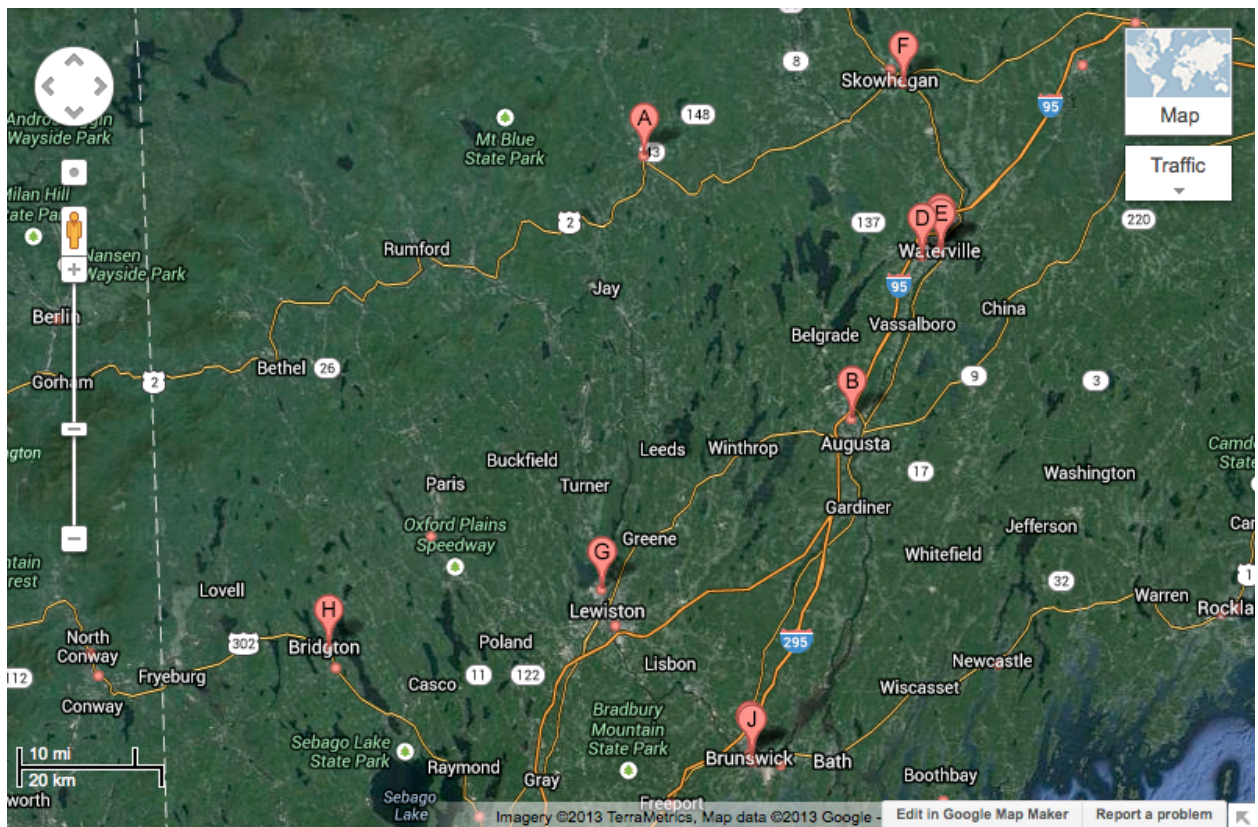


M:

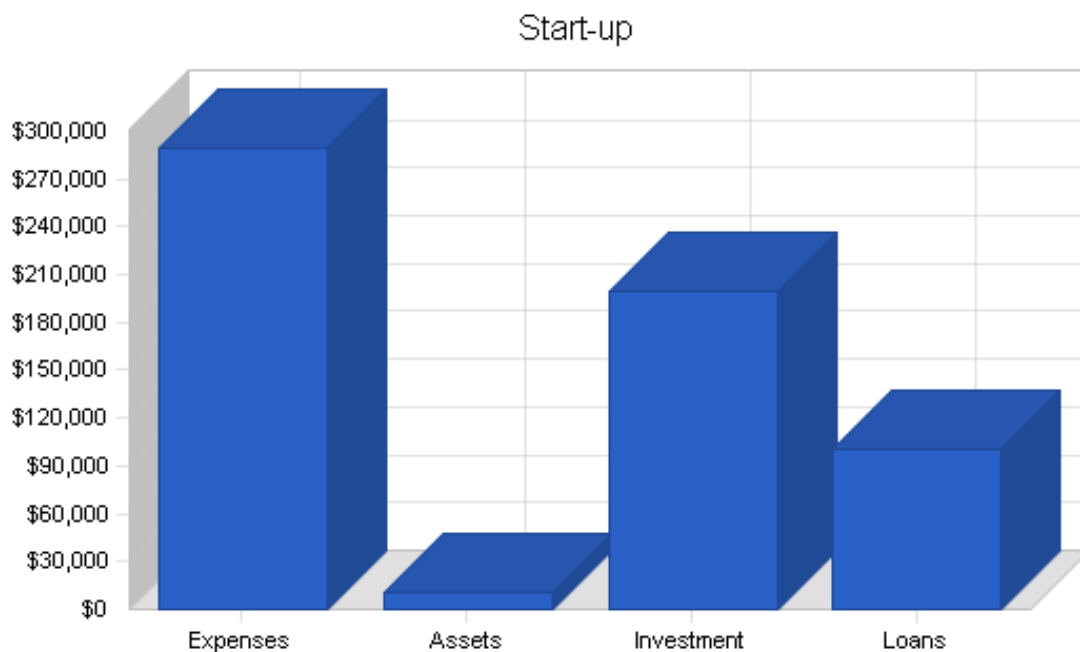
5-Year Trend Movie Theater Attendance U.S. Adults who go to the movies						
Attended Movie Theater	2007	2008	2009	2010	2011	% Lift 2007-2011
All	58%	59%	59%	59%	61%	5%
Age 18-24	71%	71%	75%	71%	75%	6%
Age 25 - 34	67%	67%	67%	70%	71%	6%
Age 55 - 64	51%	52%	51%	55%	56%	10%
Age 65+	36%	38%	39%	38%	40%	11%

Source: GfK MRI Survey of the American Consumer, Spring 2007 through 2011
Base: Attended movie theater in past six months

N: Five year study of the percentage of movie attendants by age in the United States.



O: The red markers indicate the locations of movie theaters in the surrounding area, none of which are less than thirty minutes away from Jay.



P: This graph displays, in dollar amounts, a comparison between the different areas in which start of money was distributed to.

Start-up Funding	
Start-up Expenses to Fund	\$290,000
Start-up Assets to Fund	\$10,000
Total Funding Required	\$300,000
Assets	
Non-cash Assets from Start-up	\$0
Cash Requirements from Start-up	\$10,000
Additional Cash Raised	\$0
Cash Balance on Starting Date	\$10,000
Total Assets	\$10,000
Liabilities and Capital	
Liabilities	
Current Borrowing	\$0
Long-term Liabilities	\$100,000
Accounts Payable (Outstanding Bills)	\$0
Other Current Liabilities (interest-free)	\$0
Total Liabilities	\$100,000
Capital	
Planned Investment	
Investor 1	\$80,000
Investor 2	\$60,000
Investor 3	\$60,000
Additional Investment Requirement	\$0
Total Planned Investment	\$200,000
Loss at Start-up (Start-up Expenses)	(\$290,000)
Total Capital	(\$90,000)
Total Capital and Liabilities	\$10,000
Total Funding	\$300,000

Q: This chart displays a detailed breakdown of the different money requirements for the start-up of the company.

Start-up	
Requirements	
Start-up Expenses	
Legal	\$1,250
Stationery etc.	\$1,000
Brochures	\$800
Insurance	\$5,000
Rent	\$58,000
Expensed Equipment	\$75,000
Utilities	\$6,500
Leasehold improvements	\$140,000
Other	\$2,450
Total Start-up Expenses	\$290,000
Start-up Assets	
Cash Required	\$10,000
Other Current Assets	\$0
Long-term Assets	\$0
Total Assets	\$10,000
Total Requirements	\$300,000

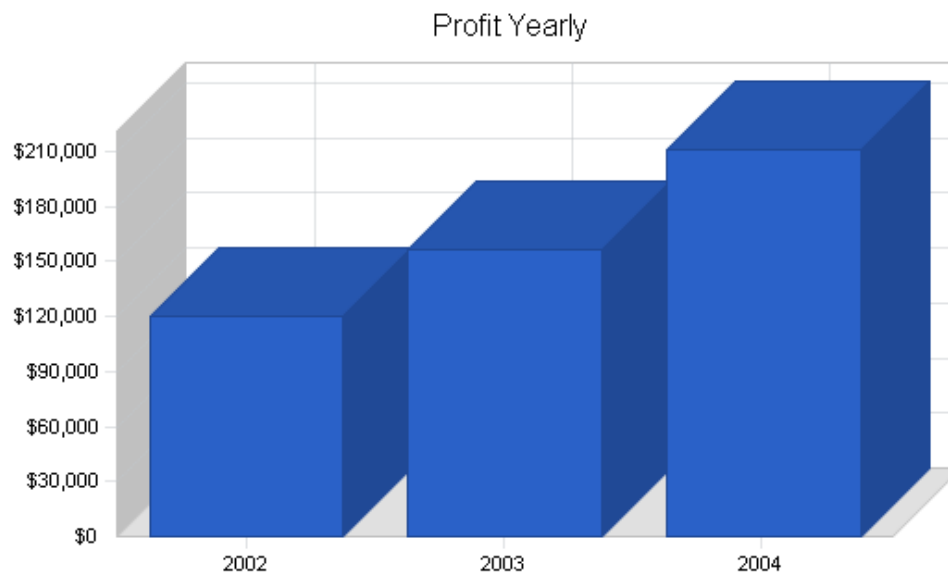
R: This chart displays a further breakdown of the different aspects of start-up requirements.



S: This graph displays the projected profit growth of the company within the first 3 years.

Pro Forma Profit and Loss			
	Year 1	Year 2	Year 3
Sales	\$539,075	\$650,750	\$825,600
Direct Cost of Sales	\$33,000	\$44,000	\$55,000
Other Costs of Sales	\$0	\$0	\$0
Total Cost of Sales	\$33,000	\$44,000	\$55,000
Gross Margin	\$506,075	\$606,750	\$770,600
Gross Margin %	93.88%	93.24%	93.34%
Expenses			
Payroll	\$150,000	\$150,000	\$150,000
Marketing/Promotion	\$25,200	\$25,200	\$25,200
Depreciation	\$7,200	\$7,200	\$7,200
Rent	\$60,000	\$60,000	\$6,000
Utilities	\$25,200	\$25,200	\$25,200
Insurance	\$5,400	\$5,400	\$5,400
Leased Equipment	\$27,600	\$27,600	\$27,600
Payroll Taxes	\$0	\$0	\$0
Other	\$0	\$0	\$0
Total Operating Expenses	\$300,600	\$300,600	\$246,600
Profit Before Interest and Taxes	\$205,475	\$306,150	\$524,000
EBITDA	\$212,675	\$313,350	\$531,200
Interest Expense	\$10,449	\$8,500	\$7,500
Taxes Incurred	\$48,757	\$74,413	\$129,125
Net Profit	\$146,270	\$223,238	\$387,375
Net Profit/Sales	27.13%	34.30%	46.92%

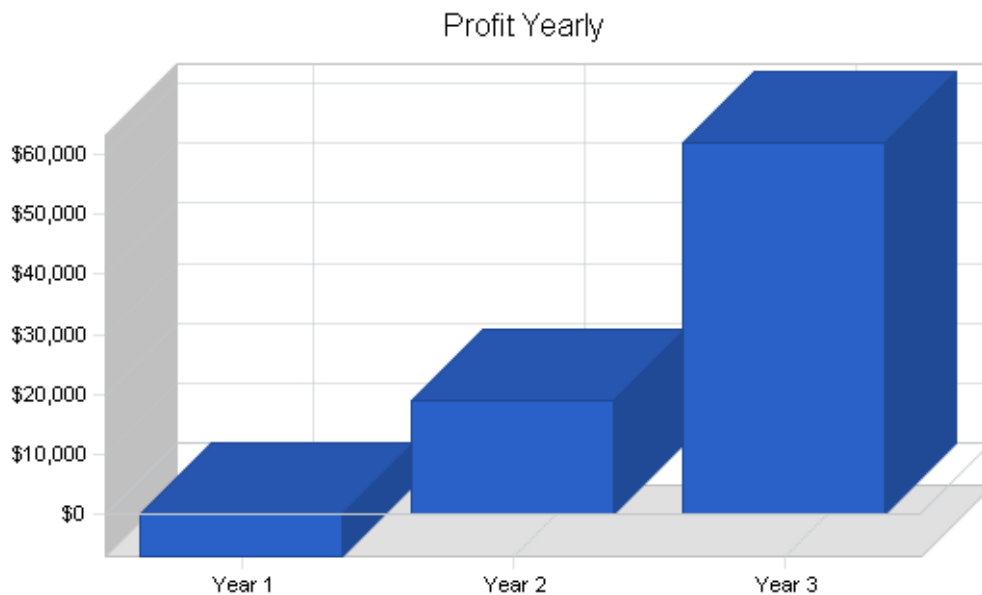
T: This chart gives a further breakdown of the specific aspects of projected profit gain and loss.



U: This graph displays the projected profit growth of the company within the first 3 years.

Pro Forma Profit and Loss			
	2002	2003	2004
Sales	\$1,098,000	\$1,249,000	\$1,425,000
Direct Cost of Sales	\$168,000	\$181,500	\$193,000
Other Production Expenses	\$0	\$0	\$0
Total Cost of Sales	\$168,000	\$181,500	\$193,000
Gross Margin	\$930,000	\$1,067,500	\$1,232,000
Gross Margin %	84.70%	85.47%	86.46%
Expenses			
Payroll	\$561,000	\$624,000	\$694,000
Sales and Marketing and Other Expenses	\$48,000	\$55,000	\$60,000
Depreciation	\$12,000	\$12,000	\$12,000
Leased Equipment	\$0	\$0	\$0
Utilities	\$12,000	\$12,000	\$12,000
Insurance	\$12,000	\$12,000	\$12,000
Rent	\$0	\$0	\$0
Payroll Taxes	\$84,150	\$93,600	\$104,100
Other	\$0	\$0	\$0
Total Operating Expenses	\$729,150	\$806,600	\$894,100
Profit Before Interest and Taxes	\$200,850	\$258,900	\$337,900
EBITDA	\$212,850	\$270,900	\$349,900
Interest Expense	\$29,255	\$35,051	\$36,752
Taxes Incurred	\$51,479	\$67,155	\$90,344
Net Profit	\$120,117	\$156,694	\$210,804
Net Profit/Sales	10.94%	12.55%	14.79%

V: This chart gives a further breakdown of the specific aspects of projected profit gain and loss.



W: This graph displays the projected profit growth of the company within the first 3 years.

Pro Forma Profit and Loss			
	Year 1	Year 2	Year 3
Sales	\$244,000	\$300,000	\$380,000
Direct Cost of Sales	\$0	\$0	\$0
Other Production Expenses	\$0	\$0	\$0
Total Cost of Sales	\$0	\$0	\$0
Gross Margin	\$244,000	\$300,000	\$380,000
Gross Margin %	100.00%	100.00%	100.00%
Expenses			
Payroll	\$181,200	\$199,200	\$214,000
Sales and Marketing and Other Expenses	\$6,000	\$8,000	\$10,000
Depreciation	\$0	\$0	\$0
Leased Equipment	\$0	\$0	\$0
Utilities	\$4,800	\$4,800	\$4,800
Insurance	\$2,400	\$2,400	\$2,400
Rent	\$24,000	\$24,000	\$24,000
Payroll Taxes	\$27,180	\$29,880	\$32,100
Other	\$0	\$0	\$0
Total Operating Expenses	\$245,580	\$268,280	\$287,300
Profit Before Interest and Taxes	(\$1,580)	\$31,720	\$92,700
EBITDA	(\$1,580)	\$31,720	\$92,700
Interest Expense	\$5,578	\$4,830	\$4,050
Taxes Incurred	\$0	\$8,067	\$26,595
Net Profit	(\$7,158)	\$18,823	\$62,055
Net Profit/Sales	-2.93%	6.27%	16.33%

X: This chart gives a further breakdown of the specific aspects of projected profit gain and loss.

Overnight, Leisure Visitors	Maine Leisure 2012 (n=1366)	Lakes & Mountains 2011 (n=119)	Lakes & Mountains 2012 (n=101)
Age:			
< 35	22%▼	44%	36%
35 - 44	17%	15%	16%
45 - 54	22%	19%	18%
55 +	39%▲	21%	30%
Mean Age (Years)	48.7	40.4	43.9
Income:			
< \$50,000	10%	11%	13%
\$50,000 - \$99,000	32%	35%	35%
\$100,000 +	43%	37%	36%
Mean Income (Thousands)	\$113.47	\$105.23	\$110.57
Female	49%▼	59%	50%
College Degree or Higher	79%▲	69%	76%
Married	63%	61%	68%
Employed Full Time	60%	66%	65%

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Detailed Methodology

Our project relied mostly on using information we accumulated through case studies found in academic articles, websites that delineate how to start-up each specific business project we were researching, and information about Jay, Maine through news articles and websites for businesses that reside in Jay.

Although each of our case-study research was done independently of each other for the most part, given our differing project areas, all of the group members utilized JSTOR and ASC to accumulate sources that touched upon our subject matter, from mills renovated into lodging to how rooftop gardening has been utilized around the world. When one group member needed help finding more sources on a particular subject, others would research into their subject as well, and often times the Google search engine would bring up legitimate case studies. The bibliographies of each study found were also used to seek out more information related to the subject.

Since our project focused on looking into how to successfully start up a business, we often had to use websites and documents that explained the necessary steps one would have to take to finance and run the business. JSTOR and ASC were not useful in this case, but many business websites catered towards this subject were.

Information about Jay, Maine was often necessary to seek out to see whether the requirements for a successful business could be fulfilled in the town. Often times, each group member would research businesses, clubs, activities, events, and areas in the Jay area by using VisitMaine.com, jay-maine.org, and websites run by businesses in and nearby Jay. Reports about the section of Maine Jay resides in (The Lakes and Mountains Region) were also used, and were released by Maine's Office of Tourism.

News articles which referenced new openings of trails, businesses, and events were also utilized to keep tabs of any new developments in Jay.

Throughout our researching, we would also have email correspondence with Mary Howes to keep her updated on what projects we were researching as well as asking questions as to where the best areas in the mill would be to set up our specific businesses. We also visited the area to see what we were physically dealing with, as well as what the surrounding environment of the mill looked like. We had no interviews or surveys, because when we met with our professors, they believed we would not have enough time to do so and instead should focus on the researching aspect of the project.

Community Gym:

When analyzing the costs and benefits of operating a community gym in the Otis Mill a lot of aspects came into play, such as construction and operation costs, critical analysis of competition, review of technical requirements, a business strategy, research of previous models, potential risks, an exit strategy, and feasibility of project and project goals. Setting up a gym in the city of Jay would be the perfect opportunity to bring together all ages of residents in a healthy learning environment. Having a community gym will allow for residents to come together for educational purposes, such as swimming classes, sports conditioning sessions, aerobic exercising lessons, healthy eating seminars, and also pool parties for special events. The biggest advantage of using the Otis Mill for a community gym is that the gym will be surrounded by different attracting businesses, such as the Otis Cafe, the potential audience from music festivals, as well as the potential movie theater and a roof top garden. The most major disadvantage is that the residents of Jay will have to pay for a gym membership,

considering it the operational and construction cost of a community gym. In addition, since the gym is ran by Otis Ventures, a for profit based company, the gym will most likely not be eligible to receive state grants, unless the grant is focused on educational purposes.

Lodging

The reason why lodgings were decided upon as one of the four projects originated from the information that Mary and Tim were currently working on creating a large banquet hall in the Otis Mill. To our knowledge, this banquet hall is in the works and will be a physical reality in the coming years. Mary envisioned the space as a place for weddings, concerts, auctions, dinners, and other special events. If these events were to become a reality, those that came to Jay for such events may often need to stay the night. However, there are no hotels or other lodging areas in Jay Maine, and the nearest ones are quite far away. So, realizing that in order for the banquet hall to reach its full potential, it must also be created with a living quarters nearby.

As research went on into learning about the surrounding community of Jay and the type of activities and age group of people who took overnight vacations to the Mountain and Lakes region of Maine, our group restructured our ideas of a hotel for a more economical start as a hostel. If there is enough traffic in and out of the hostel and banquet, then decisions to possibly turn the hostel into a hotel can be made.

Independent Movie Theater:

One of the other ideas our group came up with was an independent movie theater. The reasoning behind this decision was due to the fact that the closest movie theater to Jay was thirty minutes away in Farmington, and it's a great way to implement community

involvement into the Otis Mill. The independent route is also much more feasible for Mary and Tim because there is no need to find or rent a location, all they would need to do is renovate a given space, which saves a lot of time and money. A movie theater is also a budget-friendly and fun experience for any age and is a great way to create a profitable business that is also enjoyable for the community. When further research was conducted, it became clear that the upfront cost of an independent movie theater would be substantial, however the long-term gain can outweigh those costs.

Rooftop Garden:

One project that we looked into, was green roofs and trail spaces, which focuses more on sustainability and strengthening community relationships. The Otis Mill has been in business for over 125 years, and the building has become worn through the years of use. One of the great benefits of green roofs is the wide range of start-up costs, but it also provides an opportunity to rebuild and make any repairs on the roof that has been weakened throughout the years. Green roof technology has the potential to extend the lifespan of rooftops, manage stormwater and prevent it from going into the sewage systems and waters of the town, and it could ultimately be used as a community space. Gardening is also a viable option if the rooftop is accessible. In this event, opportunities for workshops and renting out small garden lots to community residents could all raise awareness on nutrition for young children and parents through ways that brings the community all together at the mill. These were some of the factors that our group looked into and saw from various case studies. In addition, our other three projects have a great focus on economic returns, these green projects, in particular, the green roof technology, is aimed at transforming the mill so that it is energy efficient and it reduces

the funding that is distributed to long-term repairs for conventional roofs, installation of heating and cooling systems, and water used throughout the mill. Through these examples, one can see that this project benefits the sustainability and longevity of the mill, as well as focuses on the community relations. The methods used to finalize and solidify the support for the viability and feasibility of this project is seen through the case studies of similar projects and mill transformations that chose to install green roof technology.

Supplemental Results

Venture Capitalism

Venture capitalism is defined as capitalism that invests in innovative enterprises where the potential profits are large. For example, it is a broad subcategory of private equity in which investments are typically made in premature companies in order to launch a seed or start-up company, early stage development, and expansion of a business. Over the past years the focus of venture capitalist have been on new technology. Additionally, there are different legal structures that businesses and companies typically follow, such as a benefit corporation, a limited liability company, and a low-profit limited liability company. A benefit corporation is a legal structure that is designed for for-profit entities that want to consider society and the environment in addition to profit in their decision making process. A limited liability company is a flexible form of business that blends elements of partnership and corporate structures. Additionally it is a legal form of company that provides limited liability to its owners. Lastly, a low-profit limited liability company is a legal form of a business entity that bridges the gap between non-profit

and for-profit with socially benefitting investments. Otis Venture is a uses a LLC structure, which means Otis Ventures provides liability for their owners and they are reliable for using their profits from new investments as a funding source. Furthermore, venture capital companies rely on the money made from owning equity in companies it invents in. Although venture capitalism is associated with having a high risk factor, venture capitalist in return receive a significant amount of control over company decisions and ownership.

Additional Sources—

Early Brainstorm of Project Ideas

Ideas for Mill

astronomy equipment in tower

watch tower; birding and hiking

rooftop gardens

roller skating rink

color me mine/you're fired/pottery

gym/rock climbing

trampoline room

game room/arcade/ Dave and Busters-esque

Brewery/Restaurant (another one)

Bumper cars/race cars

YMCA-esque

cooking classes in kitchen

tennis/squash/basketball

farmer's market space

independent movie theater

bowling

Events for Mill

Halloween Fair

Fall Festival

Winter Festival

Farmer's Market

Food Festival, competition for meal on menu

Fishing Competition

Beach BBQ

Kayaking Trips

Music Festival/Competition

Karaoke Night

Access to Mill

Nearby colleges have buses which travel to and from mill site on weekends

Make integral complex for elementary through college students in education and entertainment

Lodging Requirements and Policies

Department of Human Services Bureau of Health Division of Health Engineering,

Chapter 206: Rules Relating to Lodging Establishments (Augusta, Maine: Maine

Department of Human Services, January 1, 2003) <http://www.maine.gov/sos/cec/rules/10/144/144c206.doc>

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Maine Bureau of Tourism Study on Lakes and Mountains Region

“Visitor Tracking Research 2012 Calendar Year Annual Report. Regional Insights: Maine Lakes and Mountains”, Maine Office of Tourism and Davidson-Peterson Associates, Accessed 10/12/2013, <http://www.visitmaine.com/resource/visitmaine/vault/application/2012-maine-lakes-and-mountains-regional-report.pdf>

Literature Review

How Post Industrial Site Revitalization Works: The Development and Benefits of Mill Transformations and the Key Factors that Lead to its Success

Throughout most of the 19th and 20th century, mills were seen as the “economic engines of their host communities”⁴¹. However, these structures began to lose business during the middle of the twentieth century as technology advanced and as time passed on, mill owners found themselves with no other option, but to close down their mills.

One statistics has found that “there are more than 400 small villages and towns [within New England] whose evolution and development have been tied to the presence of a

⁴¹ John R Mullin, “The Revitalization of New England’s Small Town Mills: Breathing New Life into Old Places”, (Massachusetts, Amherst: University of Massachusetts, 2009), 3.

mill”⁴². These mill towns were driven by the economic prosperity of the mill business and with the shutting down of these mills, these towns, its residents and the employees of these mills were all greatly affected. With the sudden high numbers of unemployment, workers were forced to find sources of income elsewhere. One of the major impacts of the mill shutdowns was the mass exodus of people from their towns (due to lack of availability of employment within the town), which severely affected the livelihood and social prosperity of the town.

Today, there is a growing interest towards these mills once more. Mills structures are highly adaptive and flexible in terms of use and thus create a great structure for economic opportunity. The revitalization of these mills have led to employment opportunities, the increase in property value, and the successful retransformation of these mills have brought these mills towns back to the economical highlights of their previous days⁴³. Additionally, with mill revitalization, or with any historical building preservation, renovation requires a great amount of investment in money, time and effort. From this understanding, several authors and researchers have looked into and focus on the factors that can lead to successful historical preservation and revitalization. Although, there is not yet a common framework that can dictate success for the full transformation of these historic buildings, there are certain factors that need to be considered. In the works and research of Mullins and Kotval, they concluded that the six key factors that led to the success of mill revitalization were: 1) The building must be usable 2) The town’s regulation must meet the needs of the mill (i.e. zoning regulations)

⁴² Ibid, 3.

⁴³ "Economic Impact Report: The Economic and Fiscal Impact on Maine of Historic Preservation and the State Historic Preservation Tax Credit." Planning Decisions, Inc. (2011).

3) An Up-To-Date Infrastructure is important 4)The Presence of an Industrial Cluster is important (i.e. areas of high competitiveness) 4) The Mill must be environmentally clean 5) Local Marketing is Essential 6) Local Leadership is Essential⁴⁴. In addition to these inhibiting factors, post-industrial mills towns are often burdened with negative labels as well, which makes renovation of large mills a troublesome task. In wanting to elaborate in on this conflict, the three main issues with the renovation of any mill that we want to focus on are the Mill, the market and the host community.

An important aspect in deciding whether a mill renovation would be successful focuses on the location of the mill, the physical condition it's in, and whether its previous use and history can be utilized in the renovation. Starting with location, it is important that it accessible to the community while also being visible by the highways that pass by the town, so as to draw people into the area and easier to get to for visitors and trucks with supplies. If it is too isolated, like in the case Harrisville, New Hampshire, home of the Colony mill complex, it becomes almost forgotten and does not make a meaningful impact on the community⁴⁵. The second mill factor to consider when it comes to deciding whether a mill can revitalize a Milltown is the physical state the mill is in. Firstly, size is an important factor to consider, as it affects the ease with which it can be divided into smaller spaces, the prevalence and need of heating and ventilation systems and whether it can meet building code standards⁴⁶. Large complexes such as the former

⁴⁴ Mullin, John and Zenia Kotval. Assessing the Future of the New England Mill Town: What are the Key Factors to a Successful Revitalization. Amherst: Landscape Architecture & Regional Planning, 1997,7.

⁴⁵ Armstrong, Factory under the Elms: A history of Harrisville, New Hampshire, 1774–1969 (Cambridge, Massachusetts: Museum of America ,1969), 55.

⁴⁶ John R Mullin, The Revitalization of New England's Small Town Mills: Breathing New Life into Old Places, (Massachusetts, Amherst: University of Massachusetts, 2009), 3.

brass works in Waterbury, Connecticut, are “difficult to reuse because they are centrally heated and upgrading or replacing that system would require tremendous reinvestment.⁴⁷” Many post-industrial mills have been around for more than a hundred years, and thus have deteriorated to a point where “revitalization is just prohibitively expensive.⁴⁸” For example, the Tap and Die complex in Greenfield, Massachusetts met the first requirement of a mill, situated in a great location along the Green River. Unfortunately, though, due to negligence, it was allowed to deteriorate to a point beyond salvage⁴⁹.

However, the same cause for the deterioration issues can often be the mill’s saving grace: how long it’s been around. Former textile mills are often seen as important places of heritage, and key to the future of many mills, as it often leads to outside funding. For example, the history of the Blackstone Valley became a necessary part of its success story. In the early 1980s the “two states petitioned the National Park Service to review the Blackstone River Valley, and all of its historic, and cultural resources, to determine any level of national significance.⁵⁰” Through this, the mill was able to receive funding for its renovation, Congress in 1986, designated the Blackstone Valley a National Heritage Corridor for the purposes of: “preserving, and interpreting for the educational, and inspirational benefit of present, and future generations the unique and

⁴⁷ East Wharf Architects. Structural Analysis and Feasibility Study of the Kirby Mill and Annex (Mansfield, Connecticut: Town of Mansfield, 1994), 23.

⁴⁸ Mullin, Revitalization of New England’s Small Town Mills, 155.

⁴⁹ Orth, A. “Say Goodbye to Plant 1”, The Recorder, October 10, p. 1.

⁵⁰ Blackstone Valley Tourism Council. Federal Investment Attracts Private Investment in Industrial *Historic Sites* (Pawtucket, Rhode Island: BVTC, 2003), 5.

significant contributions to our national heritage of certain historic and cultural lands.⁵¹”

All improvement and redevelopment projects would be in the hands of the state, or local and private hands with the National Park Service lending leadership, technical assistance, financial resources. With these resources, the Blackstone River Valley was also able to attract private investors and has rejuvenated both the mills and the town in which the renovated mills occupy. As we see, “heritage development – the conservation of historical and cultural resources, the protection of natural resources, the development of tourism and community revitalization programs, along with the establishment of education and interpretive projects – has become a critical element in the economic strategies that are being crafted in communities, cities and states across America.⁵²”

In order for a mill to be successful past the point of its renovation, however, it must hold a business worthwhile to the community and its surroundings. A mill can be many things, including residential, commercial or retail uses, or industrial uses, but the options narrow when a renovator must chose an option that will draw in customers. The US has seen facilities used as shopping centers (the Ann and Hope Department Store in Lonsdale, Rhode Island, and the Colony Shopping Center in Keene, New Hampshire), as a university (University of New Hampshire at Manchester), as housing (Whitinsville, Massachusetts), and as museums, such as in Whitneyville and Collinsville, Connecticut. One of the most creative reuses was the conversion of the Sprague mill complex in North Adams, Massachusetts, into the popular Massachusetts Museum of

⁵¹ Mullin, *Revitalization of New England's Small Town Mills*, 155.

⁵² August R. Carlino, Interview, Chair of the Alliance of National Heritage Areas, 2002

Contemporary Art⁵³. However, these structures have only worked after market feasibility evaluations helped mill renovators realize what would attract the most customers, as well as the versatility of the structure and its site.

However, just because a mill has potential to hold a business that is successful doesn't mean it can draw the right companies in. The second issue with renovation is financing. Mill complexes are far from modernistic spaces, and are often located in economically stagnant towns, meaning many companies will not be attracted to the place. These locations, post-industrial towns, are often labeled as areas with a higher rate of crime. If workers and customers are uncomfortable in these sites, a company is very unlikely to reside in the mill⁵⁴. There is also the issue of raising funds for a mill, especially if it doesn't get funding from a Heritage Foundation like the case study studied above did. Contributions from the public sector could be as little as a tax break or could be as much as "grants for physical improvements, waivers of fees, relaxation of performance standards, or the granting of low-interest loans."⁵⁵ However, even with that, the renovators of the mill will not be close to breaking even. Additionally, bankers will not give loans to a decaying 100 year structure, as it is a horrible form of collateral, often having little or even negative capital value⁵⁶. The mill can gain some capital from private sectors and loans from banks, however, if it starts refurbishing the mill through these public financial options. For example, the state of Rhode Island provides a 30 per cent

⁵³ Mullin, *Revitalization of New England's Small Town Mills*, 156.

⁵⁴ Porter "The competitive advantage of the inner city", (*Harvard Business Review*, 1995) 61-78.

⁵⁵ Mullin, *Revitalization of New England's Small Town Mills*, 157.

⁵⁶ Mullin, *Revitalization of New England's Small Town Mills*, 157.

tax credit that can be applied against improvement costs⁵⁷, and at the state level brownfield cleanup and infrastructure assistance is often available when there is a concern for environmental safety in the mill.

A third aspect that affects whether a mill can be renovated and revitalize a mill-town revolves around the community's involvement in the redevelopment of the mill. The benefits the community receives from revitalization are immense. They can jumpstart the economy of a town, through advantages by returning property to the tax roles and can increase the general quality of life through environmental clean-up, access to new resources, and an increase of publicity and traffic in the town. However, before this can happen, the attitude of the community need to have similar, positive, and strong views about the revitalization effort to make it happen. Ambivalence to the mill will kill productivity before anything has even started. For example, The Stanley Mill in Uxbridge, Massachusetts, was the oldest operating mill in Massachusetts when it was forced to close. In 1998, a new owner purchased the building and all the liabilities that went with it, which included a "back tax payment to the Town of Uxbridge of several hundred thousand dollars."⁵⁸ The new owner made it clear to the community when he bought that he could not revitalize the site unless the back taxes were forgiven. The town was and still is in need of the revenue. However, over the past decade, both sides have not moved on the issue, and the building sits, and continues to decay. The community's willingness to change zoning regulations provides a powerful indication of its desire to revitalize its mill. In contrast to the last example, Groton, Massachusetts

⁵⁷ State of Rhode Island Laws Mill Building and Revitalization Act (1996), Chapter 42-64.9.

⁵⁸ Mullin, Revitalization of New England's Small Town Mills, 158.

showed initiative in its desire to renovate its mill. The townspeople, through workshops that involved the entire community and detailed plans, analyzed the potential of West Groton Mill and concluded that the best uses for the structure were mixed housing and office space rather than manufacturing. The town's leadership then "changed the zoning to reflect the new realities, developed a request-for-re-use proposal, and attracted a developer."⁵⁹ Today, beautifully restored along the Nashua River, the old mill complex contains medical offices and apartments for senior citizens⁶⁰. Community leadership and action are imperative for a successful revitalization of a mill and, eventually, the mill town itself.

In the past few decades, the potential for mill towns to make a comeback through the renovation of their old mills have been acted upon, creating successful rejuvenations of entire community economies. However, there are many hurdles to jump before a mill can be both successfully renovated and economically stimulating to its surroundings. The mill must be in a condition worth fixing without bankrupting all who try to invest in it, it must have investors to begin with (be they governmental, corporate, private, or preferably all three), and the community must be invested in the renovation and willing to make changes to their policies in order to make their ideas a reality.

Are Feasibility Studies Effective?: How Demographics and Economics Alter the Results

When prepared effectively, feasibility studies can be a great passage into the future marketing strategy plan of the company or venture. Meaning that, "as much as

⁵⁹ Mullin, Revitalization of New England's Small Town Mills, 159.

⁶⁰ Mullin, Interview with Floyd Foreman, Uxbridge Town Planner,(March 2007).

answering the question ‘Is a project feasible?’, a good market and financial feasibility study also addresses the question of what is most feasible and what should all its attributes be to assure maximum success”⁶¹. Demographics are a crucial aspect of feasibility studies, as the impact and relatable nature of the project are essentially founded on the community member involved. Geo-demographic and geo-socioeconomic-lifestyle market area data, including current and five-year population projections, should be obtained and analyzed for further development⁶².

A New York company called Research & Marketing Strategies created a case study in which they conducted a feasibility study and demographic analysis for a client⁶³. The methodology behind their approach consisted of in-depth interviews to identify market potential, a telephone survey for the target market to determine travel patterns, a demographic analysis (including detailed household trends, expenditures as consumers, and other regional trends), as well as an assessment of potential competition for the client⁶⁴. In this case and in many other cases, demographics can most often be the most important part of a feasibility study. If there is no knowledge of the market, then there can be no analysis of the economical risks or rewards.

Economic Aspects of Infrastructure Projects

When trying to figure out whether feasibility studies can be applied to social economics it is important to separate the social from the economics. More specifically, it

⁶¹ <http://www.whitehutchinson.com/leisure/feasibility.shtml>

⁶² <http://www.whitehutchinson.com/leisure/feasibility.shtml>

⁶³ <http://www.rmsresults.com/uploads/Case%20Studies/RMS%20Case%20Study%20-Feasibility%20Study%20and%20Demographic%20Analysis.pdf>

⁶⁴ <http://www.rmsresults.com/uploads/Case%20Studies/RMS%20Case%20Study%20-Feasibility%20Study%20and%20Demographic%20Analysis.pdf>

is important to understand the four major aspects of economic evaluation, such as first the basic concepts of facility investment evaluation; second the methods of economic evaluation; third the factors that affect cash flow; and finally the effects of different methods of financing on the selection of process of projects.

The basic concepts of facility investment evaluation include looking at time preferences for consumption, opportunity costs, minimum attractive rate of return, cash flows over the planning horizon, and profit measures. The methods of economic evaluation include evaluating the net present value method, the equivalent uniform annual value, the benefit-cost ratio method, and the internal rate of return method. Factors that affect cash flow include the depreciation and tax effects, the price level changes, and the treatment of risk and uncertainty. Lastly, the effects of different methods of financing on the selection of process of projects include types of financing and risk, public policies on regulation and subsidies, the effects of project financial planning, the interaction between operational and financial planning, and the interaction between operational and financial planning.⁶⁵ Additionally the validity of economic feasibility studies for infrastructure projects need to be improved in order to make sure that the allocation and expenditure of the money follows standards; in order to minimize the effect of political pressure on decisions regarding the construction of infrastructure projects; in order to promote public and private partnership; lastly, in order to attract private investors for capital investments.⁶⁶

⁶⁵ http://pmbook.ce.cmu.edu/06_Economic_Evaluation_of_Facility_Investments.html

⁶⁶ Hyari, Khalied, and Amr Kandil. "Validity of Feasibility Studies for Infrastructure Construction Projects." *Jordan Journal of Civil Engineering* 3, no. 1 (2009): 66-77.

